

We claim:

1. A tidal gate system for a regulating the flow of tidal waters between a first side and a second side of a main opening, the tidal gate system comprising:
  - a primary door member arranged for movement between open and closed positions relative to the main opening, where gravity biases the primary door member into its closed position, and
  - the primary door member defines a regulated opening;
  - a secondary door member arranged for movement between open and closed positions relative to the primary door assembly, where gravity biases the secondary door member into its closed position, and
  - the secondary door member covers the regulated opening when in its closed position;
  - a door float configured to cause the secondary door assembly to move out of its closed position when a primary water level on the first side of the main opening exceeds a predetermined regulated opening level; and
  - a regulation float, where the regulation float is operatively connected to the secondary door assembly such that the regulation float forces the secondary door assembly into its closed position when the primary water level exceeds a predetermined regulation float level.
2. A tidal gate system as recited in claim 1, further comprising a latch system for latching the secondary door member in its closed position under predetermined conditions.

3. A tidal gate system as recited in claim 2, in which the latch system comprises:

- 5 a latch member attached to the main door member for movement between latched and unlatched positions, where the latch member is arranged to hold the secondary door member in its closed position when the latch member is in its latched position; and
- 10 a latch float operatively connected to the latch member such that the latch float moves the latch member into its unlatched position when the primary water level exceeds a predetermined latch float level.

4. A tidal gate system as recited in claim 3, in which the predetermined latch float level is below the predetermined regulation float level.

5. A tidal gate system as recited in claim 1, further comprising a lock system for locking the secondary door member into its closed position.

6. A tidal gate system as recited in claim 5, in which the lock system comprises:

25 a first lock flange secured to the primary door member;

a second lock flange secured to the secondary door member; and

a lock member that extends through the first and second latch flanges to lock the secondary door member in its closed position.

30 7. A tidal gate system as recited in claim 2, further comprising a

lock system for locking the secondary door member into its closed position.

8. A tidal gate system as recited in claim 1, in which the primary opening defines a primary opening level, where the primary opening level is located below the regulated opening level.

9. A tidal gate system as recited in claim 1, in which secondary door member comprises:

10 a blocking portion sized and dimensioned to cover the regulated opening; and

a lever portion operatively connected to the regulation float; where the second door member rotates about a pivot axis relative to the primary door member; and

15 the blocking portion and lever portion are arranged on opposite sides of the pivot axis such that movement of the regulation float causes movement of the lever portion and movement of the lever portion causes movement of blocking portion.

20 10. A tidal gate system as recited in claim 1, further comprising an adjustment assembly that allows the regulation float level to be adjusted.

11. A method of a regulating the flow of tidal waters between a first side and a second side of a main opening, the method comprising the steps of:

arranging a primary door member for movement between open and closed positions relative to the main opening such that gravity biases the primary door member into its closed position;

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forming a regulated opening in the primary door member;  
arranging a secondary door member for movement between open  
and closed positions relative to the primary door assembly  
such that gravity biases the secondary door member into its  
5 closed position and the secondary door member covers the  
regulated opening when in its closed position;  
connecting a door float to the secondary door member to cause the  
secondary door assembly to move out of its closed position  
when a primary water level on the first side of the main  
10 opening exceeds a predetermined regulated opening level;  
and  
connecting a regulation float to the secondary door assembly such  
that the regulation float forces the secondary door assembly  
into its closed position when the primary water level exceeds  
15 a predetermined regulation float level.

12. A method as recited in claim 11, further comprising the steps  
of latching the secondary door member in its closed position under  
predetermined conditions.

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13. A method as recited in claim 12, in which the step of latching  
the secondary door member comprises the steps of:

attaching a latch member to the main door member for movement  
between latched and unlatched positions such that the latch  
25 member is arranged to hold the secondary door member in  
its closed position when the latch member is in its latched  
position; and

connecting a latch float to the latch member such that the latch float  
moves the latch member into its unlatched position when the  
30 primary water level exceeds a predetermined latch float

level.

14. A method as recited in claim 13, further comprising the step  
of configuring the regulation float and the latch float such that the  
5 predetermined latch float level is below the predetermined regulation float  
level.

15. A method as recited in claim 11, further comprising the step  
of locking the secondary door member into its closed position.

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16. A method as recited in claim 15, in which step of locking the  
secondary door member into its closed position comprises the steps of:  
securing a first lock flange to the primary door member;  
securing a second lock flange to the secondary door member; and  
15 passing a lock member through the first and second latch flanges  
when the secondary door member is in its closed position.

17. A method as recited in claim 11, further comprising the steps  
of:

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defining a blocking portion of the secondary door member, where  
the blocking portion is sized and dimensioned to cover the  
regulated opening; and  
defining a lever portion of the secondary door member;  
connecting the lever portion to the regulation float;  
25 arranging the second door member for rotation about a pivot axis  
relative to the primary door member; and  
arranging the blocking portion and the lever portion on opposite  
sides of the pivot axis such that movement of the regulation  
float causes movement of the lever portion and movement of  
30 the lever portion causes movement of blocking portion.

18. A method as recited in claim 11, further comprising the step of adjusting the regulation float level defined by the regulation float.

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- a primary door member arranged for movement about a first pivot axis between open and closed positions relative to the main opening, where
  - 10           the first pivot axis is arranged above the main opening such that gravity biases the primary door member into its closed position, and
  - the primary door member defines a regulated opening;
  - 15           a secondary door member arranged for movement about a second pivot axis between open and closed positions relative to the primary door assembly, where
  - the secondary door member defines a blocking portion and a lever portion, and
  - 20           the second pivot axis is arranged between the blocking portion and the lever portion such that gravity biases the secondary door member into its closed position in which the blocking portion covers the regulated opening;
  - 25           a door float operatively connected to the secondary door assembly such that the secondary door assembly moves out of its closed position when a primary water level on the first side of the main opening exceeds a predetermined regulated opening level; and
  - 30           a regulation float operatively connected to the lever portion of the

secondary door assembly such that the regulation float forces the secondary door assembly into its closed position when the primary water level exceeds a predetermined regulation float level.

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20. A tidal gate system as recited in claim 19, further comprising:  
a latch member attached to the main door member for movement  
between latched and unlatched positions, where the latch  
member is arranged to hold the secondary door member in  
its closed position when the latch member is in its latched  
position; and  
a latch float operatively connected to the latch member such that  
the latch float moves the latch member into its unlatched  
position when the primary water level exceeds a  
predetermined latch float level.

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21. A tidal gate system as recited in claim 19, further comprising:  
a first lock flange secured to the primary door member;  
a second lock flange secured to the secondary door member; and  
a lock member that extends through the first and second latch  
flanges to lock the secondary door member in its closed  
position.

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